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ABSTRACT

This paper presents a portion of a larger study testing assumptions from Lev Vygotsky's spontaneous private speech theory and the relationship between private speech (overt self-talk) and writing development. Sixteen kindergarten and first-grade children were observed over time in natural classroom settings to note changes in private speech and writing performance while writing journals. Results supported Vygotsky's prediction for increased task-relevant private speech as task difficulty increased but remained within the child's instructional zone. Children used more self-guiding speech as they transitioned from one writing stage to the next. In general, results revealed that children at this developmental level used speech while engaged in expressive writing. A discussion of results considers limitations of the coding system used, methodological issues for further research concerning spontaneous private speech, and recommendations to elementary teachers concerning teaching methods that apply Vygotsky's ideas to the learning process. Contains 19 references. (MSE)

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The Influence of Private Speech on Writing Development: A Vygotskian Perspective

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Abstract

This paper is an excerpt from a larger study (Schimmoeller, 1997) which tested assumptions drawn from Lev Vygotsky's spontaneous private speech theory and relationships between private speech (overt self-talk) and writing development. Sixteen kindergarten and first-grade children were observed in their natural classroom settings. Children were observed over time to note changes in private speech and writing performance. Each child was observed for a total of six observation sessions, three in the fall and three in the spring as they were engaged in journal writing. Verbatim transcripts were coded using Berk's (1984) speech categories adapted from Kohlberg's (1968) speech categories. Results supported Vygotsky's prediction for increased task-relevant private speech as task difficulty increased but remained within the child's instructional zone. Children used more self-guiding speech as they transitioned from one writing stage to the next. In general, results of this investigation revealed that children at this developmental level employed speech while engaged in expressive writing. A discussion of the results considers limitations of the coding system, methodological issues for future research concerning spontaneous private speech, and recommendations to elementary teachers suggesting teaching methods that apply Vygotsky's ideas to the learning process.

The Influence of Private Speech on Writing Development: A Vygotskian Perspective

This study examined the development of written expression in one elementary school with a mixed-age grouping structure in kindergarten and first-grade. Developmental philosophy and developmental psychology as they relate to the education of children was emphasized according to Lev Vygotsky's sociocultural perspective. Vygotsky's (1986) idea of learning preceding development and his belief that early communication behavior patterns are essential for learning was examined. The private speech and writing development of 16 children was followed as they progressed from the beginning of the school year to the end of the school year.

Vygotsky's (1986) interest was in children's interactions within their natural environments, and how these interactions affected later learning. One avenue children use to master their own behavior, as it relates to academic achievement, is the use of private speech. Private speech refers to overt speech used by children that is addressed to the self, to guide behavior, or is directed to no one in particular (Berk, 1986).

Two topics explored here include private speech and writing development. Private speech, is a key component in examining early language patterns, and was examined in Vygotskian terms, according to hierarchical private speech levels. Writing,

defined as expressive prose, not mechanical skill, was examined according to developmental stages.

Two prominent figures in the study of young children have investigated the private speech [egocentric speech] phenomenon, Jean Piaget and Lev Vygotsky. Piaget (1926) advocated egocentric speech [private speech], lacking real communication, held no real purpose. Not until the child transitioned to socialized intercommunicate speech did language facilitate thought. In contrast to Piaget, Vygotsky (1986) contended that the study of thought development in children from different social environments, "must lead to results that will permit the formulation of laws having a much wider sphere of application" (p. 56). One such example was the functional importance of private speech for thought.

Vygotsky (1986) hypothesized that as private speech reflects planning and regulating actions; it should change from a mere behavioral accompaniment to a lead-in to a goal-directed action. Once a child was able to self-guide learning they were ready to move onto more complex concepts.

Private Speech

Private speech is a common phenomenon among young children, yet its influence on children's learning has not been understood until recently. According to Berk (1992) and Diaz (1992) private speech appears regularly during the preschool years,

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performs a number of self-regulatory functions, and predicts improved performance on a wide range of tasks.

Private speech is witnessed daily during observation of young children interacting with their environments. Imagine a four-year-old child playing alone in a sandbox. As you observed this situation you might hear comments similar to "I will dig a hole over here for the turtles." The child never makes eye contact or expects interaction from the observer. The child is engaging in private speech, describing and guiding what she is doing. Private speech is most frequent in young children from two to ten years old and is influenced by various circumstances (Berk, 1992).

Vygotsky believed that language progressed from the social to the individual where Piaget believed the opposite, that language developed from the individual to the social (Vygotsky, 1986). Piaget asserted that development preceded learning, therefore instruction must lag behind the child's maturation. At the core of their debate on language development was the direction of children's language. Because of this important difference a debate concerning the importance of private speech has arisen.

In addition to the frequency of private speech children use to attain challenging tasks, Vygotsky (1978) emphasized the

importance of the role this speech played in the child's cognitive development. He demonstrated two important points:

> (1) A child's speech is as important as the role of action in attaining the goal. Children not only speak out about what they are doing: their speech and action are part of one and the same complex psychological function, directed toward the solution of the problem at hand. (2) The more complex the action demanded by the situation and the less direct its solution, the greater the importance played by speech in the operation as a whole. Sometimes speech becomes of such vital importance that, if not permitted to use it, young children cannot accomplish a given task. (Vygotsky, 1978, p. 26)

This led Vygotsky to contend that children engaged in the learning process used private speech, just as they used their eyes and hands to solve psychomotor tasks.

Vygotsky's elaboration of private speech is important in understanding the relationship between private speech and writing development. Vygotsky's theory examined the role of private speech in the developmental process of emergent writers. Viewed from the perspective of Vygotsky's social-psycholinguistic base, speech was understood as having more than a communicative function. Speech, including private speech, was

seen as serving a critical cognitive function in all human activity.

In his studies Vygotsky (1986) noted when children engaged in cognitively difficult tasks they also engaged in frequent private speech to guide themselves in performing tasks. In addition, during the early stages of private speech the speech usually accompanied the child's actions in a disrupted and fragmented manner. During later stages or levels of private speech the speech moves toward the beginning of the process and is used as a planning stage. The child now used private speech as a guide to accomplish intended goal.

Private speech influences writing as the child discovers the value of talking for himself (Arnold, 1991). Thus, private speech is seen as a stage of development preceding inner speech, and written expression becomes the final outcome of the movement from thought in inner speech to its final form, descriptive prose. For the young writer private speech functions as a self-regulatory tool, as a means to the final written product.

Private Speech and Task Difficulty

Children function on three levels related to performance on cognitive tasks. The first level is the independent level. At this level children can easily and successfully perform a task or solve a problem with little assistance. The second level of functioning is the instruction level. At the instruction level

children can perform a given task with direct support. Vygotsky (1986) identified this level as the Zone of Proximal Development and stressed its importance in effective instruction. The third level is the frustration level. If children cannot successfully perform a given task, even with adult assistance, they experience frustration and helplessness.

In relation to private speech, if the task is too easy (independent level) or if the task is beyond the child's capability (frustration level) the child engages in little or no private speech. In contrast, if the child is functioning at the instruction level, private speech utterances increase (Anastopoulos & Krehbiel, 1985).

Writing Development

Vygotsky's (1986) theory indicated that children use private speech to tackle the writing process and come to grips with this symbolic system. He pointed out that researchers must look past writing as a complicated motor skill but instead pay closer attention to written language as a system of symbols and signs which when mastered provides children with a stepping stone in their entire cultural development (Vygotsky, 1978). Vygotsky (1986) argued that writing was not only a tool children use for communication but also that it facilitated cognitive growth.

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Vygotsky (1978, 1986) suggested that the internalization of overt action generates thought and that this internalization of what children are expressing orally allows them to attach language to thought and ultimately to written expression. An example of this is when children speak to themselves as they attempt a complicated problem. This speech for self becomes an internal representation of the idea. The idea can then be translated on to the blank page allowing another medium for self-expression.

Written language begins with first-order symbolism and gradually moves on to second-order symbolism, which in turns gradually moves on to direct symbolism (Vygotsky, 1978). Children use spoken language as an intermediary tool during early writing attempts; however, gradually this link disappears and written language is converted into signs that directly symbolize the entities and relations.

Early writing originates in symbolic play and progresses through drawing to writing. It is important for children to develop second-order symbolization in order to be proficient in deriving meaning from objects and to use language to redefine meaning which will then be transferred to writing (Pellegrini, Galda, Dresden, & Cox, 1991). As children develop their ability to visualize signs, talk is used as an accompaniment to and then an organizer of their action. This private speech serves to

guide children as they explore the visual system of writing (Dyson, 1989).

Vygotsky's (1978) general research into the writing process led him to many important points. He found that primitive marks serve first as memory aids to children and are gradually transformed into figures and pictures only to be replaced by signs (letters and words). Vygotsky observed that children's early writing attempts reflected first-order symbols, directly denoting objects or actions. Once the child makes the connection between these figures and speech he comes to realize he can represent his ideas using symbols to represent words (letter like forms and letter/sound strings). When the child reaches this conclusion he can then begin learning the conventional aspects of the language and move on to direct symbolism.

Method

Participants

Two self-contained, mixed-age group classrooms were involved in this study. A sample of children was selected from the classroom populations. The classrooms were chosen from those teachers who gave their informed consent to have the researcher in their classroom for extended periods of time. In each classroom a total of eight children with parental permission to participate were randomly assigned to the study.

Observations were conducted during morning sessions in both classrooms.

A total of sixteen children were observed. There were four dyads in each classroom (see Table 1). Two of the eight girls were African American, two were Brazilian and four were Caucasian. Of the eight boys one was African American and seven were Caucasian. Individual information related to gender, grade placement and age is included in Table 2.

The children were members of two mixed-age-group classes that combined kindergarten and first-grade students in a self-contained situation. Both classrooms of children who participated were located in the same elementary school. Journal writing was included in both classes though in different formats. Because both kindergarten and first-grade children are typically at the beginning stages of the writing process, the study included children from both grades.

Materials and Procedure

Data for the current study were collected during two sessions, fall, 1995 and spring, 1996. This study was conducted using naturalistic observation in a public school setting. Through direct, personal contact with children and teachers a better understanding of the context in which private speech occurs resulted. Data used to construct meaning in this study included observations, recordings and copies of documents.

Children who engaged in journal-writing activities in the classroom on a daily basis were observed. The goal was to discover if the private speech used by these children during journal-writing activities changed over time and if writing performance changed as well.

Direct observation was used to gather evidence using a structured observation system. Coding of private speech utterances followed Berk's (1986) design as described below:

1. Level 1: Self-stimulating, task-irrelevant private speech. (a) Word play and repetition; (b) task-irrelevant affect expression; and (c) comments to absent, imaginary, or non-human others (e.g., "I want to go home, I miss my mommy.").
2. Level 2: Task-relevant externalized private speech. a) Describing one's own activity and self-guiding comments; (b) task-relevant, self-answered questions; c) reading aloud and sounding out words; and (d) task-relevant affect expression (e.g., "I did it!" "This is hard.").
3. Level 3: Task-relevant external manifestations of inner speech. (a) Inaudible muttering (remarks involving clear mouthing of words that cannot be heard); and (b) lip and tongue movement only (no clear mouthing of words).

The observer recorded when instances of each concept or category occurred (refer to chart in Appendix A). Sixteen children were observed, for a total of six observations each. Private speech utterances were transcribed and audiotapes were used to verify transcriptions.

Time lag (Frauenglass' and Diaz's, 1985) refers to the data collection design in which observations are conducted at one point in time, for example observing children in September, and then are conducted again after a specified period of time, for example, returning in May to observe and record again. The two sets of data would then be analyzed and compared to each other. In an attempt to develop a sense of private speech behaviors as they develop, a time lag data collection mode was used in this investigation.

Each observational period was timed and the duration of each period was recorded. Private speech verbalizations were recorded verbatim. A private speech verbalization was defined as a word or group of words which are spoken together with little hesitation between them (Berk, 1984). Words were considered to be separate utterances if they were separated by more than a second (Furrow, 1992).

Collection and Coding of Written Performance Data

Following each observation session, a photocopy of the journal writing created by the child was collected. At the

conclusion of the data collection a total of six writing samples had been collected for each child. Each writing sample was placed into a writing stage category (refer to chart in Appendix B). Writing stages were taken from the works of Vygotsky (1986), Cole (1993), Dyson (1985), Moss (1982) and Sulzby (1992). The children were placed in the major stage (Stage 1: first Order Symbolism, Stage 2: Second Order Symbolism or Stage 3: Direct Symbolism) if two or more of their writing samples fit into that stage. For example, if a child had two writing samples which fell into Stage 1 and one that fell into Stage 2 they would be categorized as a Stage 1 writer.

Private speech and writing development were analyzed within and between groups. Group differences were examined in relation to grade level, sex, classroom context, initial frequency of private speech, and level of private speech related to writing stage. A simple quantitative statistic, t-tests and ANOVAS for comparisons of two means from matched groups, was used. These statistics were used to determine whether or not means from the same participants at two different times or between two categories of participants were different beyond what would be expected due to sample-to-sample variation (Slavin, 1992). The t-tests were run to test variation between the first and last data collection, between the kindergarten and first grade children and between boys and girls.

Group Comparison

This research is an example of a post facto design; the researcher did not manipulate the independent variable, the independent variable was assigned, therefore was a subject variable. Children were measured on traits they already possessed and were assigned to categories on the basis of their private speech use and writing stage. The children were placed in nonequivalent groups on the basis of their writing stage and then measured on frequency of private speech use at Levels 2:Task-relevant externalized private speech and 3:Task-relevant external manifestations of inner speech.

In order to test Vygotsky's theory children functioning on different levels are required. Therefore, two different class groupings were used as one subject pool in the analysis. Two conditions applied to the data analysis are important to this discussion. First, two children were deleted in the final results because they were already at Level 3 in writing at the onset of the study, leaving a sample size of fourteen. It is only when there is potential for change and it does not occur that private speech will change. If the child has reached the independent level in relation to the task they must move to a more difficult task for change to occur. Second, Level 1: Self-stimulating, task-irrelevant private speech was not included in

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the analysis because it was assumed to be unrelated to the child's performance on the task.

It is important to remember that this investigation focused on the possible relationship between the variables but does not address the issue of causation. It was the intent to make predictions based on the information gathered.

A repeated measure analysis of variance was conducted, with the dependent variable being the frequency of private speech during observation sessions and the independent variable being writing stage. There are two groups measured twice for this analysis; a two-way ANOVA with ANOVA, Table 3 and Figure 1 illustrating the interaction. Three areas were investigated: a) is there a difference on one main dimension, in this case in those children that did change and those children who did not change, b) is there a difference from pretest to posttest time and c) is there interaction between the two; did the one group change more than the other group.

Results and Discussion

Before discussing the results of the analyses concerning the relationship between writing development and private speech, it is important to note that because of the naturalistic design of the study, the duration of the children's journal writing activity varied. Though the same number of observations occurred for each child, engaged time varied; private speech was collected for the time the child spent engaged in the writing activity. The average time on task across both observation sessions was eighteen minutes. The mode of time spent on the journal writing activity was fifteen minutes occurring 27 out of 96 times.

With regard to the degree of private speech used by kindergarten and first grade children during journal writing, descriptive data in the form of means is reported at the pretest (observation session A) and the posttest (observation session B) times. The overall incidence of private speech was high. Based on the total sample (n=16), all children were observed to engage in private speech at one of the three levels. At the pretest session there was very little Level 1 private speech; 11 of the 16 children (68.8%) did not use any Level 1 speech. There was very little change at the posttest; 10 of the 16 children (62.5%) did not engage in Level 1 private speech.

The frequency of Level 2 private speech use was very different. At the pretest, all of the children engaged in some use of Level 2 private speech; 11 of the children (68.8%) used Level 2 private speech six or more times. At the posttest, the number of children using Level 2 private speech frequently increased to 15 (93.7%). Like Level 1, Level 3 speech was used little by the children; eight (50%) did not use it at all during the pretest, and seven (43.8%) of the children did not use it during the posttest. At the posttest another two of the 16 children (25%) only used Level 3 speech once.

Mean number of private speech utterances as a function of grade level and time of observation are shown in Table 4. In examination of Levels 1 and 3 there is variation in the scores where at Level 2 the scores are more concentrated around the mean. The average number of Level 1 utterances of all children is low ($\underline{M}$=1.4) and only a few children used this level of private at all as the standard deviation shows. The profile of Level 3 speech is similar to Level 1 with very few utterances generated (M=1.0) by few of the children (SD=1.4). There is a slight increase in Level 3 at the posttest (M=2.1) but again very few children used this level. The number of Level 2 private speech utterances was very different. All the children used Level 2 private speech more frequently (M=10.1, SD=7.1). These data suggest that children varied markedly in the amount

of Level 2 private speech they exhibited. The difference between private speech use at any of the levels between boys and girls is only slight.

There is little reason to expect cognitive tasks, such as writing, to have any effect on self-stimulatory utterances (i.e., Level 1 private speech). For this reason, no further analysis of Level 1 data was conducted. However, if Vygotsky's theory has merit, Level 2 and Level 3 private speech should be linked to moderately difficult intellectual tasks. Therefore, to simplify the analysis, frequency counts for these two levels were combined into a single score for each child in the study.

Comparison of writing development stage provides an initial profile of how the children compared from the pretest session to the posttest session. During the pretest session 8 of the children (50%) were in Stage 1:first Order Symbolism, 6 (37.5%) were classified in Stage 2:second Order Symbolism and 2 (12.5%) fell into Stage 3:Direct Symbolism. By the posttest session no children were in Stage 1,12 of the children (75%) fell into Stage 2 and 4 (25%) fell into Stage 3. Fourteen of the children involved in the study progressed from one writing stage to a higher stage, however, not all to the same degree. None of the children who started in writing Stage 1 remained in that stage. The majority of the children were in writing Stage 2 by the end of the study. One child moved from Stage 2 to Stage 3. Only

four of the sixteen children had any writing samples that were in Stage 3,and 2 of those four began at Stage 3 at pretest time.

It is clear, then, that all the children either advanced in writing stage or did not change (about half the children did each) and that first-graders started the year at a higher stage than their Kindergarten counterparts. In general, these data support construct validity of the stage designations.

In order to test Vygotsky's (1986) theory children functioning at different levels is required. As mentions previously, data were collected at two grade levels (Kindergarten and first-grade) to insure there would be variation in cognitive maturity. However, in the present study, grade level per se is not an interesting variable to preserve in the analysis. For this reason, the eight Kindergartners and eight first-graders were grouped into a single sample of 16. Upon reflection, there appears to be a connection between changers and non-changers and grade placement. Suggestions for this trend for future investigations are discussed in the conclusions section.

According to Vygotsky's (1978) theory, private speech (Level 2 and 3 especially) should increase as children confront difficult tasks, and decline as they solve them. To test this idea, each child was categorized according to whether he or she advanced from one stage of writing to the next. Five of the

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fourteen children, consisting of 4 first-graders and 1 kindergartner, did not advance in writing, all were at Stage 2 in the fall and when observed again in the spring were still at Stage 2. Of the nine children who did demonstrate a change in writing stage, seven, all kindergartners, moved from Stage 1 to Stage 2, one first-grader moved from Stage 2 to Stage 3 and one kindergartner moved from Stage 1 to Stage 3. Because non-advancers have yet to solve the writing problem - that is, they have not yet moved to the next stage—it was predicted that these children would tend to increase their number of private speech utterances.

Before testing this prediction, however, it is important to recognize two special cases. In the current sample there were two children who exhibited Stage 3 writing on both pretest and posttest. Because it is only when there is potential for change and it does not occur that private speech will change. If the child has reached the independent level in relation to the task they must move to a more difficult task for change to occur. For this reason, these two cases were removed from the analysis.

For the remaining 14 participant a 2(advancers vs. non-advancers) X 2 (Pre-posttest) repeated measures analysis of variance was conducted on the combined private speech scores. Means, of private speech frequency and level taken at two data points indicated some variation in private speech among the

children involved in the study. Private speech Level 2 at posttest time (M=10.1) was significantly different from pretest time (M=14.9), p<.05. The girls observed increased their use of Level 2&3 private speech utterances significantly from pretest (M=11.0) to posttest (M=19.8), p < .05. There were no significant differences in private speech use from pretest to posttest for the boys, or among the kindergartners.

Private speech showed a positive relationship with no change in writing development. As shown in Figure 1, when you remove the children who demonstrated Level 3 writing at the outset (these children started at Level 3 and ended at Level 3) there is a significant difference between changers (those who changed writing level) and non-changers with respect to their increased use of private speech. Non-changers increased their level of private speech more than changers.

Table 3 provides the mean private speech scores for changers and non-changers in relation to writing change from one stage to another. A mean score of Level 2 and Level 3 private speech frequency was computed for each group. Children's private speech acts were significantly higher at session B, posttest, (M=20.5) compared to session A, pretest, (M=12.5), $F(1,12)$+ 20.58, p <.01. In fact, the increase was more than one standard deviation above the mean.

As can be seen in Figure 1, the most straightforward interpretation of this interaction is that those children who advanced from one stage to another increased their private speech less than those who did not advance in writing. The points on the Figure 1 provide a visual representation of the means across groups. Private speech (Levels 2&3) is used more frequently by non-changers than changers. This pattern interacts strongly from pretest to posttest time. The results suggest some specific relationships between writing development and private speech overtime.

Vygotsky's (1978) theory that private speech predicted later cognitive development was not statistically supported for reasons discussed in that section. There was a significant difference in the amount of private speech used by the children from session A to session B and there was a significant interaction between private speech and children who did not change in relation to their writing stage over time.

In summary, the children who did not demonstrate change in their writing increased their private speech frequency more than the children whose writing did advance. Writing change was a significant influence on private speech. The findings are in line with Vygotsky's developmental theory; we can expect children to differ in how they develop in logical ways.

Conclusions and Recommendations

The findings suggest that children use private speech to guide cognition. If the task is challenging, requiring the child to accommodate information, children increase the use of self-talk. It also appears that private speech is an important mediating variable in children's increasing ability to regulate their writing. Those children who advanced in writing stage maintained private speech utterances at about the same degree from session A to session B. While the children who were non-advancers in writing used increased amounts of private speech.

There was evidence that private speech occurred in children who were in kindergarten or first-grade. This finding is consistent with Berk's (1984) study. All sixteen children engaged in private speech, indicating that private speech is a universal behavior among young children when they are involved in expressive writing tasks. Establishing the existence of private speech leads to questions related to how children use self-talk and how self-talk changes - its developmental progression.

One major finding of this investigation was the link between writing development and private speech. Two lines of private speech use became apparent, not only is the frequency of private speech important to task success, but the level of the private speech equally contributes to cognitive growth.

Knowledge of each child's level of private speech provides key information to each child's learning, thus leading teachers to better understand individual differences and individual learning needs.

There was evidence to support Vygotsky's (1978) claim that private speech guides learning. Specifically, the data show that children who did not advance in writing increased private speech utterances. Those children whose private speech increased from session A to session B did not advance from one writing stage to another. This suggests that if the task is at the instructional level, the need for private speech is strong. One explanation may be that the second group (advancers) had moved from the independent zone in one writing stage to the frustration level in a higher writing stage. As they moved up a level the higher level may have produced frustration, when a child is overwhelmed at first they do not engage in as much private speech. Vygotsky argued (1978) that when a task is very difficult the child will not engage in private speech. As the child becomes more comfortable with the task they will begin to use private speech to guide and plan their work.

Next, the relationship among the levels used by individual children indicated where the child was headed. The results support Vygotsky's (1978) theory that private speech grows in quality with development. Specifically, that private speech

moves along a hierarchical line of development from task-irrelevant word play to task-relevant sounding out words. Higher level private speech utterances (Levels 2 and 3) may serve as a means for carrying out routine writing functions, such as planning, modifying and editing steps in the writing process. Both the kindergarten and the first-graders engaged in mostly Level 2 speech. No difference in the use of private speech between boys and girls was found. There was a difference in the use of private speech levels between kindergarten and first-graders, especially in Level 1 and Level 3. Though few children used great amounts of either Level 1 or Level 3 speech, more kindergartners (3 of 8 at pretest and 2 of eight at posttest) used 2 or more utterances at Level 1 than first-graders (none) and more first-graders (3 of 8 at pretest and 3 of 8 at posttest) used 2 or more utterances at Level 3 where only one kindergartner used this speech at both pre- and posttest sessions.

Four out of 5 children who were non-advancers across stages did progress within Stage 2. These four moved from using letter/sound strings to using invented spelling. One child in this group had even produced a writing sample in Stage 3: Direct Symbolism. This indicates that the children were transitioning from Stage 2 to Stage 3, therefore they increased their private speech use because they were faced with a more difficult task.

Once they reached the independent level a decrease in private speech would be predicted.

In examining the data the advancers were beginning to show a slight increase in private speech. As this group becomes more confident at their new writing stage it can be predicted they would increase their use of private speech.

The majority of the children whose private speech increased from observation session A to observation session B were first-graders whose writing had not advanced (4 first-graders, 1 kindergartner). They were engaged in learning the skills necessary to move from Second Order Symbolism to Direct Symbolism. The group of advancers, mostly kindergarten children (8 kindergartners and 1 first-grader) used the least private speech.

Study Limitations

Limitations to this descriptive study included the small number of participants (16 children) who were children in a single school and who were selected on the basis of parental permission. Further limitations included the fact that the data was collected solely by one researcher.

Implications for Future Research

The conclusions drawn above and problems, which arose during the data collection, led the researcher to make several recommendations in terms of strengthening how private speech is

studied. These recommendations are based on an understanding of both the conclusions revealed by the data and the external realities of the classroom.

A basic problem in the recording of private speech is to find an effective method for determining if a child's statement is, in fact, private speech. Though video taping and audio recording appear at first to be effective and efficient methods to collect private speech in naturalistic settings, they were inappropriate for this study. Because private speech was defined, as speech for self, not intended for others, it was very important that children's signal indicating whether the speech was intended for others be observable. To make this determination the observer must be able to have access to the child's direction of gaze, body orientation and intonation (Feignebaum, 1992). Adhering to this interpretation of private speech rather than relying on the content or function of the speech reflects more purely, Vygotsky's definition of private speech.

Another difficulty in the study arose in coding of private speech utterances. Kohlberg, Yaeger, & Hjertholm (1968) reported that the problem with studying private speech is that there are many varieties that represent different developmental levels. In reflection, the children who were categorized in

Level 1 private speech, especially those who engaged in word play were using this word play as part of the writing.

Therefore, it is suggested that the current private speech categories include a task-relevant word play at Level 2. Diaz (1992) addressed this issue and concluded that the coding system be redesigned to better reflect the functional significance and task relevance of private speech. Studies should then be conducted with children identified using high numbers of such utterances to evaluate this type of speech on the writing process.

The results of this study generally supported Vygotsky's view of the contribution of private speech to writing development. The differences between children who advanced in writing and those who did not advance suggest that children will use private speech most frequently when they are moderately challenged by the task and are working within their instructional zone. Change in writing was the best predictor of private speech. However, some grade differences in the functions of private speech during writing did emerge. The patterns of correlation between private speech and writing accuracy suggest a stronger association between these two variables for the first-graders than the kindergartners. Because this finding appears robust, it may prove important to

focus more attention on the comparison of private speech and writing development across grade levels.

Future studies should examine how teachers can scaffold this learning especially related to complex tasks such as writing. Though more information is needed on the role of teachers on private speech recommendations can be made based on the results from this investigation.

Recommendations to Teachers

The work of Vygotsky (1978, 1986) provided theoretical support for facilitated journal writing activities. He saw private speech as an important step in developing the ability to use and process written symbols. Several writing development theorists (Sulzby and Goodman) also support this view. They advocated capitalizing on children's language patterns to explore the nature and purpose of written communication.

Teachers should encourage children to talk while engaged in the writing task. Vygotsky (1978) explained that language gives children a powerful tool that helps them when faced with a difficult task. The writing task was difficult especially for the kindergarten children. Allowing them to use self-talk assisted them in their development.

The facilitation of private speech behavior indirectly relates to increased writing proficiency. Private speech should be encouraged. Emergent classroom writing instruction should

provide for an environment where children are able, even encouraged, to externalize their thoughts freely. By externally voicing the writing the writer is able to begin recording thoughts while self-directing the process. The child becomes the stimulus; she participates in active rather than passive learning.

Although findings from this descriptive study cannot be generalized to other populations because of its limitations, some changes in children's writing associated with private speech were identified. Equally important was that some aspects of private speech seemed to have influenced children's thought process as it related to their written work.

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Appendix A

Time-Ordered Matrix: Frequency Type of Private Speech

Type of PS Utterance			Session A			Session B		
	code		Period 1	Period 2	Period 3	Period 1	Period 2	Period 3
Level 1: Self-stimulating, task-irrelevant private speech	A	Word Play & Repetition						
	B	Task-irrelevant affect expression						
	C	Comments to absent, imaginary, or non-human others						
Level 2: Task-Relevant externalized private speech	D	Describing one's own activity and self-guiding comments						
	E	Task-relevant, self-answered questions						
	F	Reading aloud and sounding out words						
	G	Task-relevant affect expression						
Level 3: Task-relevant external manifestations of inner speech	H	Inaudible muttering						
	I	Lip and tongue movement only						

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Appendix B

Time-Ordered Matrix: Writing Development Stages

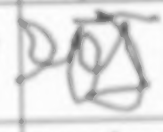
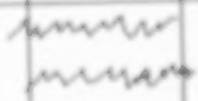
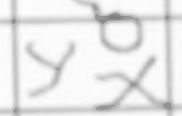
				Session A			Session B		
Stage	Code		Sample	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3
First Order Symbolism	A	Scribbling Extensions of gestures							
	B	Linear Drawing							
	C	Drawing: meaning may change							
	D	Letter like Forms							
Second Order Symbolism	E	Letter/ Sound strings	mctzbn my cat is brown						
	F	Some spelling convention (invented Spelling)	me an mi dad plae basbal						
Direct Symbolism	G	Conventional writing	I like to play ball.						

Table 1

Classroom Dyads

	Kindergarten	First Grade
Classroom A	2 boys 2 girls	2 boys 2 girls
Classroom B	2 boys 2 girls	2 boys 2 girls
Total	8 kindergartners	8 first- graders

Table 2

Individual Participant Information

Child	Sex	Grade	Age	
			Dec.	June
1	male	K	6.1	6.7
2	male	K	5.8	6.2
3	male	K	5.8	6.2
4	male	K	5.5	5.11
5	female	K	6.5	6.11
6	female	K	5.11	6.5
7	female	K	5.11	6.5
8	female	K	5.5	5.11
9	male	1st	6.2	6.8
10	male	1st	6.11	7.5
11	male	1st	6.3	6.9
12	male	1st	6.7	7.1
13	female	1st	7.1	7.7
14	female	1st	6.4	6.10
15	female	1st	6.2	6.8
16	female	1st	6.3	6.9

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Table 3

Mean Private Speech Levels 2 & 3 by Time and Change in

	Time		
Writing	Pretest	Posttest	Mean
Changers (n=9)	13.3	17.8	15.6
Non-changers (n=5)	11.0	25.4	18.2
Mean	12.5	20.5	

Note. n=14

Table 4

Mean Number of Private Speech Utterances by Grade Level and Gender and Time of Observation

	Pretest		Posttest	
	Mean	SD	Mean	SD
Combined (n=16)				
Level 1	1.4	3.2	.5	.7
Level 2	10.1	7.1	14.9	6.7
Level 3	1.0	1.4	2.1	3.4
Boys (n=8)				
Level 1	1.6	4.2	.6	.7
Level 2	11.8	7.6	15.2	7.9
Level 3	.8	.9	1.6	2.8
Girls (n=8)				
Level 1	1.3	1.9	.4	.7
Level 2	8.5	6.7	14.5	5.7
Level 3	1.3	1.8	2.6	4.0

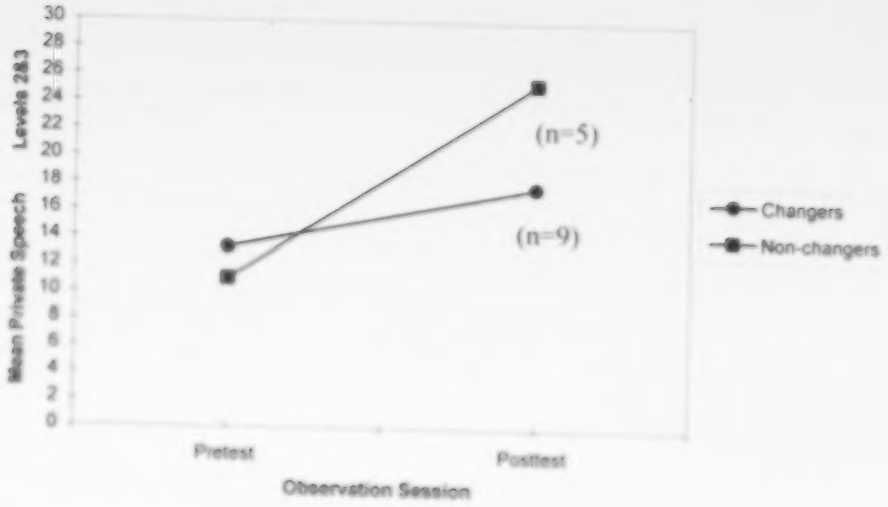
Table 5

Mean Private Speech Level Use of Participants

	Level 1		Level 2		Level 3	
	M	SD	M	SD	M	SD
Pretest	1.4	3.2	10.1	7.1	1.0	1.4
Posttest	.5	.7	14.9	6.7	2.1	3.4

Note: n=16

Figure 1. Private Speech Use as a Function of Writing Task



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